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DISCOVERIES AND IMPROVEMENTS, IN ARTS, MANUFACTURES, AND AGRICULTURE.

Method of preparing a cheap and durable Stucco or Plaster, for outside or inside Walls; by H. B. Way, Esq, of Bridport Harbour.

[From the Transactions of the Society for the Encouragement of Arts, Manufactures, and Commerce.]

Bridport Harbour, Dec. 12, 1810.

SIR,

IN consequence of your expressing an opinion that a general knowledge of my method for preparing a stucco or plaster, for outside walls of houses much exposed to sea-breezes, or bad weather, would be of service to the public, I have inclosed an account of the process, and I will with pleasure furnish any farther particulars of this business for the Society of Arts, or permit any gentleman to examine it who may wish for more information on the subject. You know the situation of my house, which is greatly exposed to the spray of the sea, and bad weather; and I can truly add, that by means of this stucco it is perfectly free from damp, and the plaster remains compact and durable.

H. B. WAY.

To C. Taylor, M.D. Sec.

To make a strong Stucco, or Mortar.

Three parts of Bridport Harbour sand to one of lime, both finely sifted, and mixed with lime water; if used as stucco, the first coat to be laid on, half the thickness of a crown piece; let it remain two days; then, with a painter's brush, wash it over with strong lime-water, and lay on the second coat of the same thickness.

1805, March 25.—Measured a coal half-bushel of Beaminster lime, and put it into a hogshead of water, to make the lime-water.—Measured two coal half-bushels more of the lime, slacked and sifted it; it then measured three half-bushels, to which were added nine coal half-bushels of Bridport Harbour sand, well sifted; I saw it well mixed up with lime-water, and thoroughly worked together; the next day saw it turned, and again mixed up, that it might be well incorporated together.

27th.—This morning had a fine coat of it laid on the west end of my large store house, at Bridport Harbour.

29th.—Had it washed with lime-water, and a second coat laid on.

Cost.

	<i>s.</i>	<i>d.</i>
One sack and a quarter of lime, at 2s. 6d. - - - - -	3	1½
Two men, and one boy, two days each, fetching and mixing up materials, and laying on; men 2s. 3d. per day, boy 10d. per day, and one pint of ale each per day, 12d. - - - - -	11	10
	15	0

N.B. I suppose the expense rather over than under rated.

May 11.—This day Thomas Everett measured and examined the work, found it hard and sound, 24¾ square yards, a little done to the house, suppose the whole to be twenty-five yards square.

Twenty-five square yards, at 7¼ per square yard, would be 15s. 1¼d.

June 13, 1806.—Examined the

work, which was perfectly sound and free from cracks, nothing having ever peeled off from it. The situation exposed to the weather in the greatest degree.

N.B. The coal half-bushel above mentioned holds exactly thirteen gallons, wine measure.

It has been the general received opinion here, that plaster made with sea sand, unless well washed in fresh water, would be always damp, but on the contrary, I find, from what has been done in my dining-parlour and passage, it has been always quite dry, although the whole of the sand with which it has been done has been thrown up by the sea, and must have been always at spring tides covered with sea water.

Method of sawing Cast Iron; by M. DUFAUD, Director of the Iron works at Montataire, near Creil. Communicated in a Letter to M. D'ARCEP.

(From the Annales de Chimie.)

I have undertaken, with the greatest pleasure, the experiments on sawing hot cast iron, that you recommend to me: I have followed your instructions; my trials have been attended with the most complete success, and I hasten to give you an account of them.

These experiments were the more interesting to me, as I have since applied them to practical purposes.

My first trial was made with the support of a grate, 108 mil. [4.25 in.] thick. This piece of cast iron was heated in a forge fire with coal: and as soon as it had acquired a sufficient degree of *incandescence*, [this is the French term,] it was placed on an anvil, and I sawed it with a common carpenter's saw, without any difficulty, and without any injury to the saw, which I dipped immediately into cold water. The carpenter con-

tinued to work with the same saw, without having any occasion to repair it.

In this, my first trial, a little accident occurred. The end of the iron I was sawing off not being supported, it broke, when 20 or 25 m. (about a line,) remained to be cut through; but this slight defect I immediately removed with the saw. Convinced of the ease with which a common saw would cut hot cast iron, I afterwards applied it to the demands of the iron works.

I had to shorten a pivot of 135 m. [5 3 in.] in diameter; but, afraid of its breaking if I cut it cold, an operation besides very tedious and uncertain, unless executed in a lathe, I had resolved to cast another, when the experiment just mentioned determined me to saw it.

Having marked the place of section with red lead, I placed the pivot in a reverberatory furnace; and when I thought it sufficiently hot, I had it taken out of the furnace, and placed on an iron support, so that the two ends had equal bearings. In four minutes, with two saws, which I used and cooled alternately, the piece was cut off, to the great astonishment of my workmen, who found the saws unhurt.

The same day, I performed a still more difficult operation. I had an anvil, which I was about to cast afresh, because it was 41 m. [1.6 in.] too thick, so that it could not be placed in its bed.

I marked the place of the saw kerf with red lead. The two cuts to be made were 217 m. [8.5 in.] long, by 189 m. [7.4 in.] high; and the thinness of the piece to be cut off required precision. This anvil was heated in a reverberatory furnace, in the same manner as the pivot; and, when sufficiently hot, two workmen took hold of it with a strong pair of tongs, and laid it on a block of cast